이름: 이승우 (Seung Woo Lee)

직위: 부교수 (Associate Professor)

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강연제목: 마이크로 코일 이식장치를 이용한 뇌피질의 정밀한 활성화 (Micro-coil Implants for Precise Cortical Activation)

Abstract:

Electrical stimulation of the primary visual cortex (V1) via intracortical electrodes has the potential to restore vision to those with a wide range of visual impairments, including traumatic eye injury and optic nerve injury/disease. However, the effectiveness remains limited in part due to the inability of conventional electrodes to selectively activate specific sub-populations of cortical neurons as well as the complex biological reactions that diminish the viability of electrodes over time. Recent demonstrations that magnetic stimulation from a micro-coil can selectively activate vertically-oriented cortical pyramidal neurons (PNs) while avoiding horizontal passing axons suggest the possibility that a coil-based approach may overcome some of those limitations. In this talk, I will introduce a novel micro-magnetic stimulation technology based on intracortical micro-coils to enhance the effectiveness of cortical visual prostheses.

Brief Biosketch:

Seung Woo Lee is an Associate Professor in the Department of Brain and Cognitive Sciences at KAIST. He received the B.S. degree in the School of Electrical Engineering and Computer Science (EECS) from Seoul National University (SNU), Seoul, Korea, in 2003. He received the Ph.D. degree in the EECS from the SNU (Advisor: Prof. Sung June Kim), in 2010. He trained as a Research Fellow from 2011 to 2015 in Dr. Fried lab in Department of Neurosurgery at Massachusetts General Hospital (MGH) and Harvard Medical School, Boston, MA. Prior to joining KAIST in 2023, he was an Instructor in Neurosurgery (2015-2018) and an Assistant Professor of Neurosurgery (2018-2023) at the MGH and Harvard Medical School. Dr. Lee has extensive experience in neural prosthetics (retinal implants and deep brain stimulation) and brain-computer interfaces. His research interests include development of implantable & wearable medical devices (Bioelectronics) as well as effective electric/magnetic neural stimulation & recording strategy (Neurophysiology). He is the recipient of a NIH R01 research funding (USA), and a Department of Defense (DoD) - Vision Research Program (VRP) funding (USA).